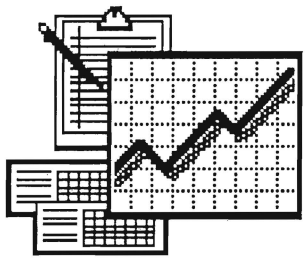
Mudford, Penny (1995)

Implications of Increased Trends in Milk
Production on the New Zealand Dairy Farmer

IMPLICATIONS OF INCREASED TRENDS IN MILK PRODUCTION ON THE NEW ZEALAND DAIRY FARMER



By - Penny Mudford

November 1995

Kellogg Rural Leadership Course Project

EXECUTIVE SUMMARY

Over the last 20 years some definite trends have occurred in New Zealand dairy farming. Total milk processed has increased steadily yet simultaneously there have been a decline in the number of dairy farms. The major reason for this occurrence is that real returns paid to dairy farmers for their milk has decreased.

We can expect to see a continuation of this trend of expansion into the future. This is likely to present a number of implications for dairy farmers. It impacts upon the lifestyle of dairy farmers and their families as well as has an effect on rural communities. Expansion has financial implications for dairy farmers as they fund their own growth. Safety and health needs on the farm and the utilisation of labour need attending to. Where dairy farm operations expand and intensify, there is a need to find sustainable land management systems which minimise the impact of farming on the environment.

TABLE OF CONTENTS

1. INTRODUCTION

The aim of this project was to explore and discuss what trends have occurred in New Zealand dairy farming over the last 20 years.

The first part of the project is compiled of data from some of the statistics presented in the Livestock Improvement publication "Dairy Statistics 1993/94". Early on in the research stage of this project it became evident that some definite trends had occurred. This raised a number of questions, some of which are addressed in the remainder of the project.

The main questions arising from the data presented are:

(i) What trends have occurred in the size and production levels of dairy farms?

(ii) Why have these trends occurred?

(iii) What implications do they have on dairy farmers, both present and future?

For the purpose of this project a "dairy farmer" was defined as an owner of a dairy farm and a member of a co-operative dairy company.

The focus of this project was kept at the dairy farm level with discussion around dairy farmers, farm staff and the rural farming community.

2.
BACKGROUND AND TRENDS IN DAIRY PRODUCTION AND RETURNS

2.1 BACKGROUND

New Zealand dairy farmers are major producers of milk with 14,500 suppliers producing 735 million kilograms of milksolids each year.*

There are fifteen co-operative dairy manufacturing companies which process these dairy products. These co-operative dairy companies undertake to process all milk supplied by their shareholders.

The co-operative companies supply dairy products to the New Zealand Dairy Board (NZDB). The NZDB is responsible for the marketing and distribution of dairy products to world markets. The Board predicts that the potential for compound growth for New Zealand dairy exports is 6% over the next ten years. (NZ Dairy Industry Vision).

Some dairy companies also process liquid milk and dairy products for the domestic market. These dairy companies market and distribute their own products within New Zealand.

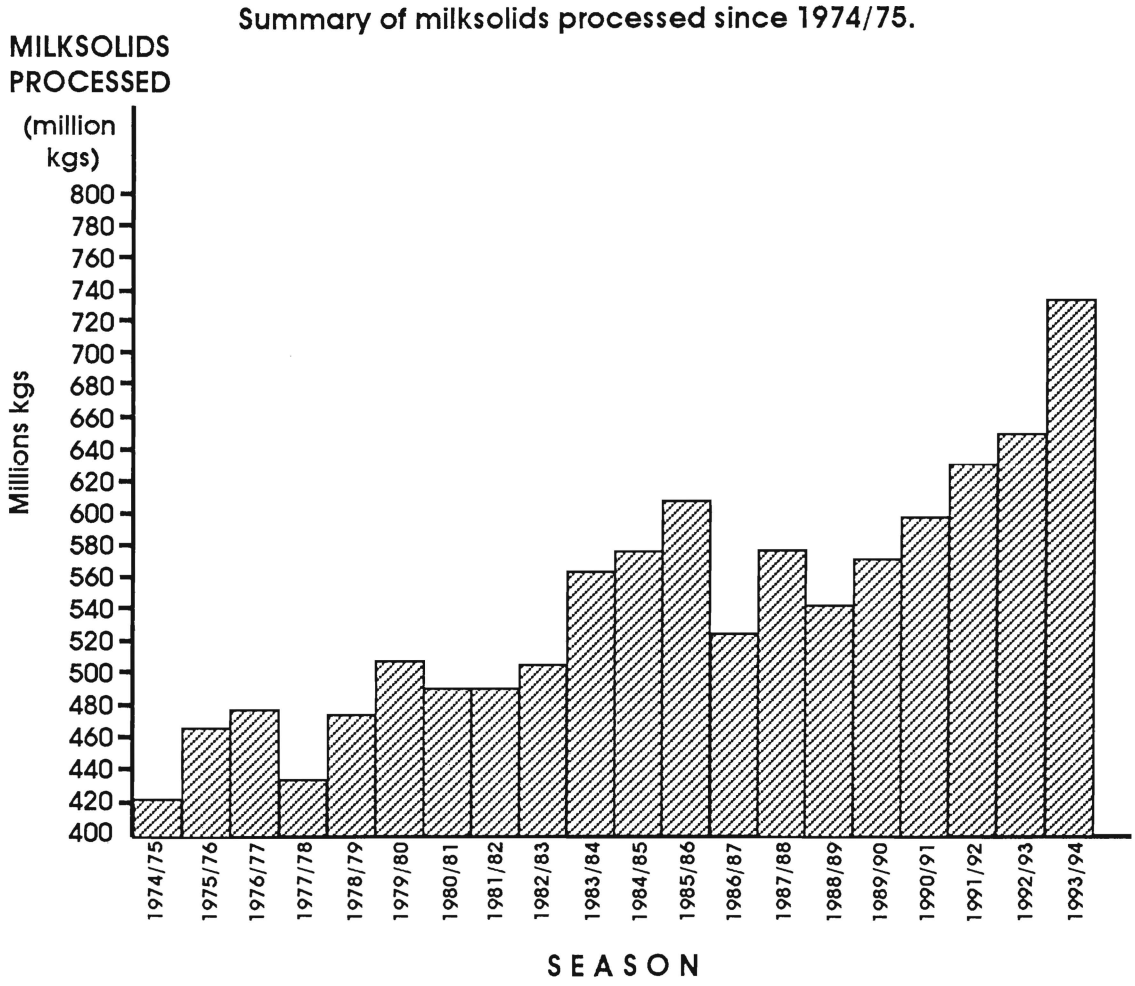
(* Livestock Improvement Corporation "Dairy Statistics 1993/94")

2.2 TRENDS IN DAIRY PRODUCTION AND RETURNS

MILKSOLIDS PROCESSED

Trends in NZ milk production show that increased production is historical. Graph 1.1 shows that the milksolids processed from 1974/75 to the 1993/94 season increased from 425 million kilograms to 735 million kilograms. This is an increase of 73%.

Graph 1.1



(Source: Livestock Improvement Corporation "Dairy Statistics 1993/94").

COW POPULATION, HERD SIZE AND SUPPLIER NUMBERS

From the 1974/75 season to 1993/94 there was a 31% increase in the total cow population. Over the same period the number of dairy farms decreased by 21% from 18,540 herds to 14,597 herds. This increase in cow population coupled with the decrease in suppliers resulted in the average herd size increasing by 67% from 112 cows per herd to 187 cows per herd as shown in Table 1.1.

Table 1.1

Summary of herd statistics since 1974/75

Season	Herds	Cow Population (millions)	Average Herd Size
1974/75	18 540	2.08	112
1975/76	18 442	2.09	113
1976/77	17 924	2.07	115
1977/78	17 363	2.05	118
1978/79	16 907	2.04	120
1979/80	16 506	2.04	123
1980/81	16 089	2.02	126
1981/82	15 821	2.06	130
1982/83	15 816	2.12	134
1983/84	15 932	2.20	138
1984/85	15 881	2.28	143
1985/86	15 753	2.32	147
1986/87	15 315	2.28	149
1987/88	14 818	2.23	150
1988/89	14 744	2.26	153
1989/90	14 595	2.31	158
1990/91	14 658	2.39	163
1991/92	14 452	2.43	168
1992/93	14 458	2.60	180
1993/94	14 597	2.73	187

(Source: Livestock Improvement Corporation "Dairy Statistics 1993/94").

The cow population for the 1994/95 season is estimated at 2.8 million cows (Steve Howse, LIC).

Since the 1988/89 season the total cow population has increased by an average 3% each year. At this rate by the year 2000 there will be an estimated 3.2 million cows milked with an average herd size of 220 cows.

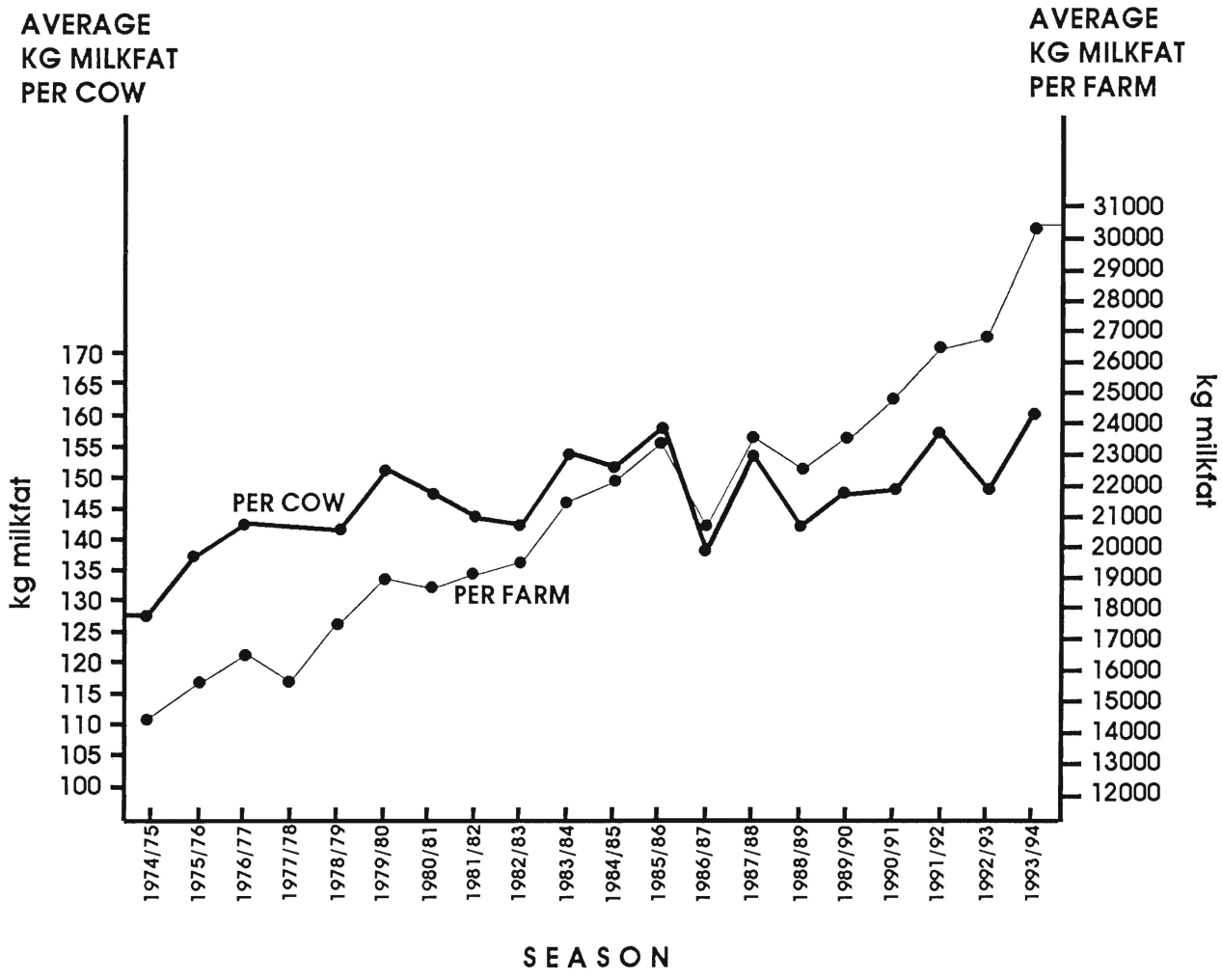
PER COW PRODUCTION AND PER FARM PRODUCTION

From 1974/75 to 1993/94, production per cow increased from 128 kilograms of milkfat per cow to 160 kilograms. This is an increase of 25%.

Increased production per cow coupled with increased in herd size of 67% resulted in the average kilograms of milkfat produced by each farm climbing markedly by 110% over a 20 year period.

Graph 1.2

Comparison of production per cow and production per farm since 1974/75.



* 1991/92 figures include some winter milk herds
** 1992/93 & 1993/94 figures include all town milk herds

(Source: Livestock Improvement Corporation "Dairy Statistics 1993/94").

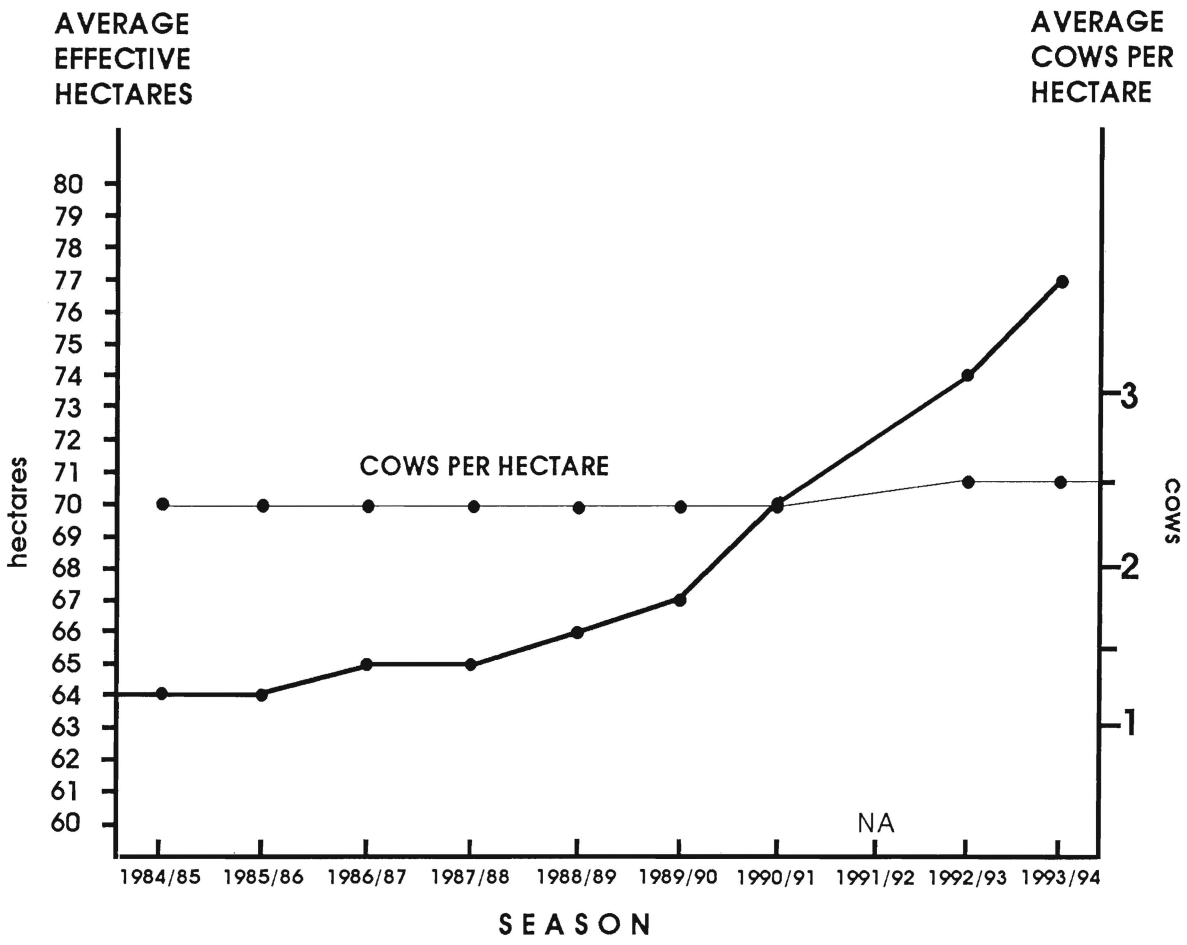
FARM SIZE AND COWS PER HECTARE

The data in Graph 1.3 shows that the average effective hectares per farm climbed from 64 hectare to 77 hectares in 10 years.

This is an increase of 20% in milking area per farm yet the average cow per hectare figures show only a minimal increase of 4% from 2,4 cows per hectare to 2.5 cows per hectare. This shows that increases in per farm production are attributed more to increased hectares than increased stocking rates.

Graph 1.3

Farm size and cows per hectare



Based on factory supply herds only.

(Source: Livestock Improvement Corporation "Dairy Statistics 1993/94").

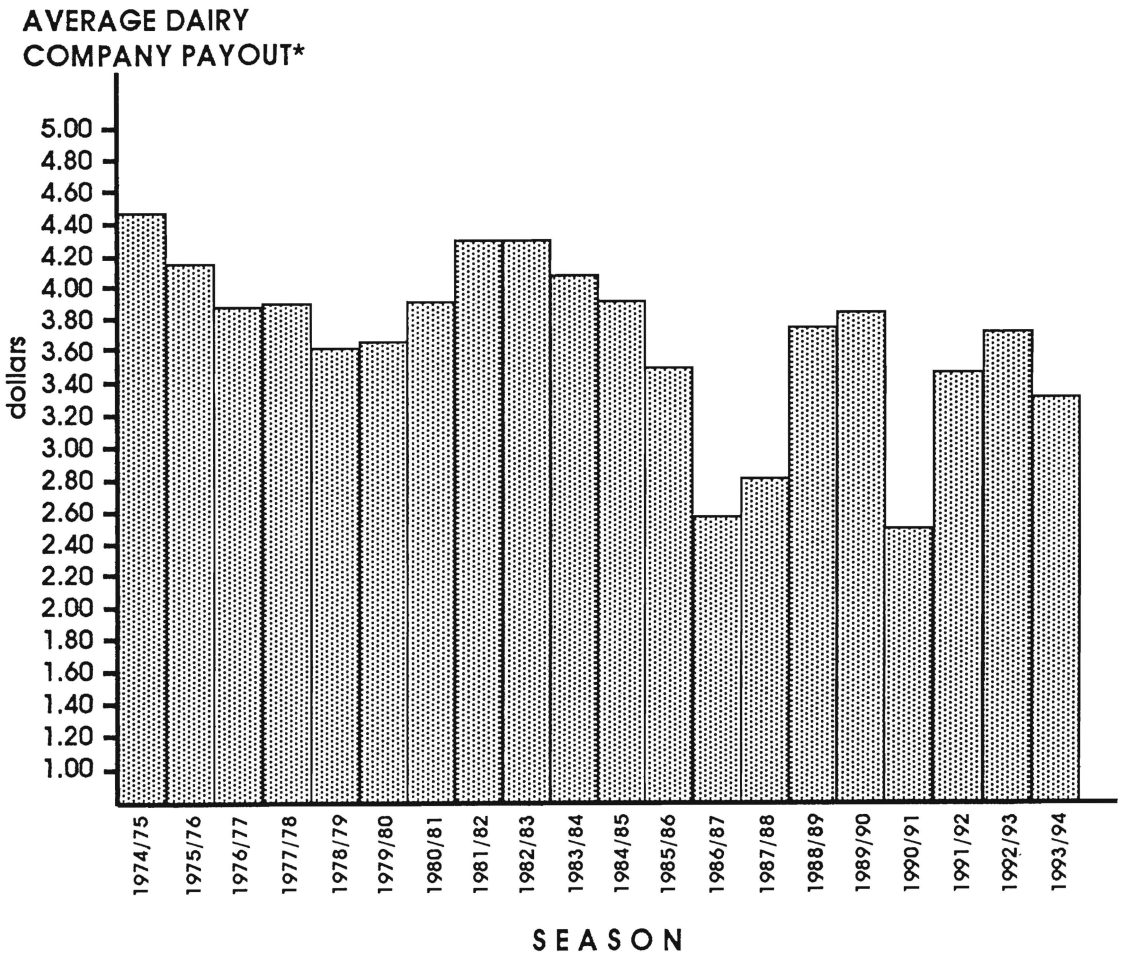
PRICES RECEIVED BY DAIRY FARMERS

Between 1974/75 and 1993/94 the inflation adjusted weighted average price received by dairy farmers from their dairy companies dropped by 25% from $4.44 kg/milksolids to $3.32 kg/milksolids. (LIC "Dairy Statistics 1993/94").

Although the price did not decrease every year there was still a negative trend in the inflation adjusted weighted average price per kilogram of milksolids received. This is illustrated in Graph 1.4.

Graph 1.4

Inflation adjusted price received from Dairy Companies



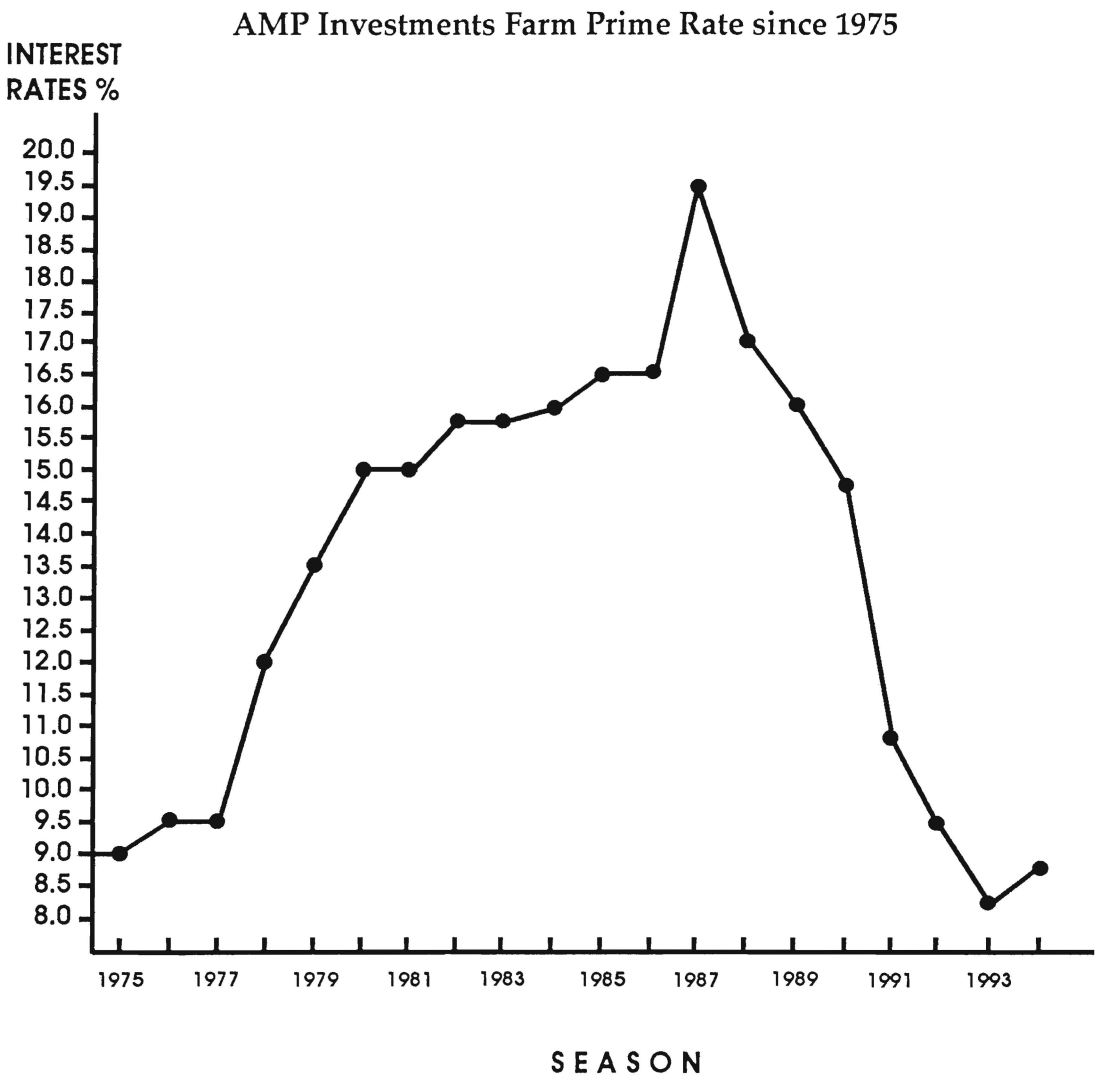
* Weighted average inflation adjusted using CPI (based on March 1994).

(Source: Livestock Improvement Corporation "Dairy Statistics 1993/94").

INTEREST RATES

In 1993/94 the interest rate was 8.75%, close to the 9% rate of 1974/75. Between these years the rate climbed to a peak of 19.5% in 1987. (Interestingly there appears to be little correlation between increased milk production and market interest rates). Where interest rates rise in a peak in 1987, and then return to a similar level in 1994, milk production increases steadily right throughout these seasons.

Graph 1.5



(Source: AMP Investments)

3.
WHAT TRENDS OCCURRED SINCE 1974/75 AND WHAT IMPLICATIONS DO THEY HAVE ON DAIRY FARMERS

3.1 WHAT THE TRENDS SHOW

There has been a 73% increase in milk processed since the 1974/75 seasons. Also there have been increases in both the cow population and per cow production of 31% and 25% respectively.

Simultaneously there has been a decline in the number of dairy farms and a decrease in the real returns received by those farmers for their milk produced.

The trends show that dairy farms have declined in number but expanded in size and increased in production over the last 20 years. The total milksolids produced on each farm has steadily increased also.

3.2 WHY HAS EXPANSION OCCURRED?

One reason for the expansion of dairy farms could be that real returns to dairy farmers have diminished.

There are limited ways in which dairy farmers can increase their disposable income whilst real returns are diminishing. Costs of production, price received for milk produced and interest rates are some factors which have an effect on farmers' income. However, farmers have little to no influence over price or interest rates. Expansion is one way in which dairy farmers can minimise the impact of diminishing returns.

3.3 WHERE DO THESE TRENDS LEAD?

By the year 2000 we could expect dairy farmers to be milking on average 220 cows per herd, based on the trend of 5% average growth each year. At this rate, dairy companies could be processing over a billion kilograms of milksolids for their suppliers.

Where expansion has enabled dairy farmers to achieve sustainable returns in the past, then it is possible that further expansion is a future option. If so, it is argueable that these trends could lead to the following scenario.

- Continued amalgamation of dairy farms.
- A further demand for land to convert to dairying.
- Larger or improved milk harvesting facilities required on farms.
- More processing capacity at dairy companies needed.
- Requirement for further capital investment by farmers, both to purchase land and to fund growth of dairy companies.
- Demand for more cows and potential for increases in stocking rates.
- Increased demand for skilled labour as more cows are milked per labour unit.
- Extra housing required for farm labour.
- Changes in demand for schools and social services in rural communities.

3.4 WHAT ARE THE IMPLICATIONS OF THESE TRENDS ON DAIRY FARMERS?

The availability of suitable land needs to be assured for farmers to expand. Expansion comes from both existing dairy farms and new entrants to dairying on conversion farms. At present dairy conversions are an attractive proposition for sheep, beef or cropping farmers looking for increased returns. However the attraction is only there whilst dairy returns are greater than the returns provided by their existing land use.

3.4.1 Financial Implications:

There are a number of financial implications upon dairy farmers as a result of expansion trends. Some possible implications are listed below:

- Decreasing numbers of dairy farms with increased size implies changing distribution of wealth and debt amongst dairy farmers.
- Extra manufacturing facilities to process increased milk production is funded by dairy farmers therefore placing further demands on farmer investment in the industry.
- The increased cost of entry into dairying by share capital required may place financial barriers to "first farm" purchasers.
- Expansion opportunities may be limited by inflated land values in some areas.
- Provision for retirement funding may be deferred where expansion takes priority, consequently raising the retirement age.

3.4.2 Utilisation of Labour:

Where there is a substantial increase of cows per labour unit on dairy farms, the management of labour is likely to become of increasing importance. Alternately where extra labour per farm is employed, this is likely to impact upon dairy farmers.

Existing farm management systems may require modifying to adapt to changing labour requirements. The type of systems that work well for owner-operator farmers may not work so well when farmers employ a sharemilker, manager or farm assistant.

Larger staff teams generally require skilled managers with expertise in areas of handling and training staff. This could mean farmer training institutions need to integrate human resource training into their curriculum to ensure their graduates are competent to handle staff relations.

It is common practice from dairy farmers to provide on-farm accommodation for their farm staff. The type of accommodation available on a farm can influence the type of staff a farmer can employ. For example, live-in accommodation can be suitable for a single farm trainee but not suitable for a sharemilking couple or farm manager with dependent children. Extra housing may be required to accommodate growing staff teams.

3.4.3 Safety and Health Needs:

The Health and Safety in Employment Act 1992 "places duties on employers, self-employed people and employees to ensure that their work activities do not harm other people". (OSH Farmers and Growers Guide). In 1992, MAF Policy commissioned the University of Otago to compile the report "Farmer and Farm Worker Health and Safety Survey Report". This survey highlighted that farmers and growers contributed considerably to accident and illness statistics. These statistics included injuries from animals mainly cattle, back injuries, machinery injuries and health problems such as skin cancer, hearing loss and chemical poisoning. The report found that the leading causes of farmer deaths are tractors, drowning, machinery and vehicles, firearms, animals, burns and chemicals, electricity and trees. Also one in three fatal accidents occur to children under 15. The Act requires that "all practicable steps" are taken to ensure the safety and health of those in the workplace.

Although the University of Otago report surveyed a wide range of farmers and growers, it is a reasonable assertion that dairy farmers make their fair contribution to these statistics. Farm bikes, tractors, stock handling, machinery and chemicals play a daily part in the running of a dairy farm. Other potential hazards include chainsaws, firearms, electrical equipment, prolonged exposure to sun, and water troughs. Dairy farmers also have the potential to sustain back injury due to the amount of lifting and bending required in the milking routine and with calving and calf rearing. There is also a limited risk of disease, such as leptospirosis and tuberculosis.

Where dairy farmers seek expansion and intensification as a means of increasing profitability, this implicates changes to farm management in relation to the requirements under the Health and Safety Act.

- Increasing herd sizes imply that more cows may be milked through dairy sheds, pushing some sheds beyond their design capacity. Facilities may require upgrading or enlarging to cope with larger cow numbers.

- Where there is increased usage of supplement there is likely to be an increased use of machinery, both in harvesting supplementary feed and feeding it out.

- Employers are responsible for their own safety as well as the safety of their employees and employees' family. This includes providing a safe working environment and a safe home environment where staff accommodation is provided on the farm.

- The employment of labour presents demands on employers to ensure that safe farming practices are used on the farm. This may require training in what safe practices are as well as monitoring to ensure that these practices are used.

- Dairy farmers may require upskilling in the area of labour management to cope with the extra reponsibilities imposed by the Health and Safety Act.

3.4.4 Effect on Rural Communities:

Continued expansion is likely to impact on some traditional dairying communities. Reducing farm numbers indicate that more dairy farmers are exiting the industry than new entrants are coming in. Where dairy farmers buy neighbouring properties and employ sharemilkers or labour the profile of the community can change.

It is possible to surmise that farm owners tend to be settled because of their capital investment in their dairy farm. On the other hand managers and sharemilkers tend to work on short term contracts of between one and five years. A consequence of this is that population turnover in some rural communities with a greater number of sharemilkers and managers may be higher.

There may also be an increased demand on local education facilities and healthcare services where sharemilking and managers have families.

Dairy expansion by conversion of other land use, such as in Southland, is likely to result in increased population in these areas. This too could put strain on existing services in rural communities.

3.4.5 Impact on Lifestyle:

Where farms get bigger it is reasonable to assume that this may impact on the family environment. Increased debt servicing by borrowing more money to fund expansion could reduce the spending power of dairy farm households. Conversely, expansion could improve the economies of scale on an individual dairy farm thus making more funds available for family spending.

Where dairy farmers choose to milk more cows themselves rather than employ labour, this implies an increased workload. Longer working hours are likely to mean less time spent with the family, limited time off and a possible negative impact on health. However the opposite may occur if expansion means that a dairy farmer can afford to employ extra labour. Being able to delegate farm duties to staff in some cases may reduce a farmers workload and provide more flexibility of time to enjoy other activities.

Increases in dairy farm size and production could have positive or negative effects on the personal stress levels of farmers. The process of expanding a dairy farm by buying more land and cows may, in fact, raise the self esteem and motivation levels of some farmers. Remortgaging, budgeting, planning and negotiating all play a role in farm expansion and provide some degree of learning opportunity. Some farmers may thrive on this process whereas others may find it all too much to cope with.

3.4.6 Environmental Issues:

It is considered that dairy farming expansion and intensification has a detrimental effect on the environment. The Southland Regional Council considered this in 1993 when it convened a workshop to discuss the effects of dairy expansion in Southland. The outcome of the workshop was to commission Robertson Ryder and Associates to compile an Environmental Impact Assessment on the effects of increased dairying, and various dairying practices, on ground water. (Robertson Ryder & Assoc, 1993). The report highlights a number of issues concerning dairy farming practices and states what impact these would have on the environment. Some of these issues include groundwater contamination by nitrogen, nitrogen and phosphorus runoff into streams, soil loss by erosion on heavily stocked pasture, and ammonia toxicity from dairy shed wastewater. Some dairy farming practices are considered to contribute to these negative impacts on ground water and soil erosion.

There exists a need for dairy farmers to continually review their farming practices to find sustainable land management systems which minimise the impact on the environment. These environmental impacts are also monitored by the regional councils whose functions include setting and reviewing "objectives, policies and methods to achieve integrated management of the natural and physical resources of the region". The Resource Management Act 1991 requires this of regional councils as well as states their function includes "the control of the use of land for the purpose of -

(i) soil conservation: and
(ii) the maintenance and enhancement of the quality of water in water bodies and coastal water.

Because these requirements are written in law it is therefore necessary for dairy farmers to ensure their farming practices cause no detrimental effect to the environment. Resource consents are mandatory for all dairy shed effluent discharges, so the practice of treating dairy shed effluent either meets an acceptable standard or not. However, monitoring of nitrogen and phosphate fertiliser application is not as rigorous and it is more difficult for farmers to know whether or not they are contributing to groundwater and streamwater contamination.

4. CONCLUSION

Increased trends in milk production over the last 20 years implicates expansion of dairy farms in New Zealand.

To minimise the impact of falling real returns for milk production, dairy farmers increased their per farm production. Also, increased productivity came about by milking more cows per dairy farm. This suggests there have been improved efficiences in farm management.

Increases in cow numbers per dairy farm has placed extra demands upon dairy farm labour. To maximise the efficiency of this labour resource, dairy farmers, sharemilkers and managers may require some degree of upskilling in the area of staff training and management.

Where expansion involves a greater us of labour, safety practices need to be congruous with the occupational safety and health requirements of the Health and Safety in Employment Act 1992. Since farmers contribute considerably to accident and illness statistics, there is a need to address this issue of safety and health on the farm.

The expansion of dairy farms has had an effect on rural communities by dairy farms amalgamating. The demand on social services in areas of dwindling population has declined. Some schools have been made redundant. Alternately, in communities where the population is still growing due to dairy expansion, the demand for housing, schools and healthcare services may exceed their availability.

Increasing farm size and production levels may have positive or negative impacts on the lifestyle of dairy farmers and their families.

Regional Councils monitor the impact of dairy farming practices on the environment. Where they consider these farming practices contribute to soil erosion and groundwater contamination, restrictions may be imposed. This could place limitations upon future dairy expansion.

Financially dairy farmers fund their own on-farm expansion as well as the expansion of processing facilities of dairy companies.

5. REFERENCES

1. *Livestock Improvement Corporation. Dairy Statistics 1993/94.*

2. *Occupational Safety and Health Service, (1993). Farmers and Growers Guide to Health and Safety in Employment Act 1992.*

3. *Robertson, Ryder and Associates, (1993). Southland Dairy Farming Expansion, Environmental Impact Assessment.*

4. *New Zealand Government, Resource Management Act 1991.*

5. *New Zealand Dairy Board, The New Zealand Dairy Industry Vision.*